



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,439	02/20/2007	Pascale Colin	1022702-000159	2813
7590		01/10/2008	EXAMINER	
George F Lesmes		LAO, MARIALOUISA		
Buchanan Ingersoll		ART UNIT		
Burns Doane Swecker & Mathis		PAPER NUMBER		
P O Box 1404		1621		
Alexandria, VA 22313-1404		MAIL DATE		
		DELIVERY MODE		
		01/10/2008		
		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,439	Applicant(s) COLIN, PASCALE	
	Examiner M. Louisa Lao	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-39 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05/05/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Applicant is advised that should claims 23 and 27 be found allowable, claim 30 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 20-24, 27-34 and 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakanishi et al. (US5847181, US'181).

4. The instant claims are drawn to a process for the preparation of alkylhalosilanes, comprising *inter alia* by reacting alkyl halide (CH₃Cl), with a solid body, formed by silicon and a catalytic system comprising: a copper catalyst and a group of promoter additives containing an additive (1) selected from metallic zinc, a zinc-based compound and the mixture thereof, an additive (2) selected from tin, a tin-based compound of the mixture thereof; optionally, an additive (3) selected from cesium, potassium, rubidium, a compound derived from said metals and the mixture thereof; whereupon the copper catalyst is used in the form of a metallic copper, a

copper halide or the mixture thereof, the solid body mass also contains a complementary promoter additive (4) selected from a phosphoric acid derivative and the mixture thereof.

5. US'181 teaches an improvement over the direct process of preparing alkylhalosilanes from metallic silicon powder and alkyl halide in the presence of copper catalyst, by increasing the amount of dialkyldihalosilane while minimizing the amount of disilanes by the addition of a phosphorus-containing compound to a contact mass comprising metallic silicon (column 1 line 1, abstract, column 2 lines 37-38 and lines 61-63). US'181 teaches that copper catalyst can be any form used, with accelerators including zinc and tin; where the copper catalyst is 0.1 to 10 parts per 100 parts by weight of the silicon powder and the accelerators, zinc at 0.05 to 1 part per 100 parts by weight of the silicon powder; while the tin at 0.001 to 0.05 part per 100 parts by weight of the silicon powder (column 3 lines 25-30). US'181 teaches that the phosphorus compound is blended in the contact mass, where the phosphorus include 1) metal phosphides; 2) metal phosphates (such as tricalcium phosphate, calcium metaphosphate, calcium pyrophosphate in anhydrous salt form and salts thereof with 1A and 2A group metals such as sodium, potassium and magnesium and 1B and 2B group metals, such as copper and zinc (column 3 lines 31-41). US'181 teaches that metal phosphates are preferred since they are very stable compounds having a high melting point, maintaining a steady effect over a long period of time without being decomposed into elemental phosphorus (column 3 lines 48-52). US'181 teaches that the loading of phosphorus is 3,000 to 10,000 ppm calculates as phosphorus (claim 1 column 6, column 3 line 62). US'181 teaches that exemplary alkyl halides include *inter alia*, methyl chloride (column 4 line 5). US'181 teaches in working examples the different phosphorus-containing compounds, as shown in Table 1 column 5, where the reaction temperature can be increased to 290°C and at

atmospheric pressure, (the pressure as inferred from the description of products having a boiling point of higher than 70°C under atmospheric pressure).

6. As to use of the acid derivative in the state that the acid derivative naturally occurs, absent a showing of criticality and unexpected results, the properties of the compounds are *inherent*.

It is well settled that a prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it. "Under the principle of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates." *MEHL/Biophile Int'l Corp. v. Miltraum*, 192 f.3d 1362, 1365, 52 USPQ2d 1303, 1305.

7. The cited prior art reference reads on the instant claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 20-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (US5847181, US'181) as applied to claims 20-24, 27-34 and 38-39 above, and further in view of Colin (US7238638, US'638) and Halm et al. (US5059343, US'343).

11. The applied reference (US'638) has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

12. The instant claims are drawn to a process for the preparation of alkylhalosilanes, comprising *inter alia* by reacting alkyl halide (CH₃Cl), with a solid body, formed by silicon and a catalytic system comprising: a copper catalyst and a group of promoter additives containing an additive (1) selected from metallic zinc, a zinc-based compound and the mixture thereof, an additive (2) selected from tin, a tin-based compound of the mixture thereof ; optionally, an additive (3) selected from cesium, potassium, rubidium, a compound derived from said metals and the mixture thereof; whereupon the copper catalyst is used in the form of a metallic copper, a copper halide or the mixture thereof, the solid body mass also contains a complementary promoter additive (4) selected from a phosphoric acid derivative and the mixture thereof.

13. US`181 art has been set forth above for the rejection of claims 20-24, 27-34 and 38-39.

14. The instant claims differ from US`181 in that the instant claims (1) recite optionally the additives chosen from cesium, potassium, rubidium, a compound derived from said metals and the mixture thereof; 2) the recitation that tin is introduced in the form of bronze and 3) recitation that the additive chosen from a derivative of an acid of phosphorus or a mixture thereof, and specific examples of said acid phosphorus derivatives, consisting of various hypophosphites.

15. US`638 is relied upon to teach that additional additives in the direct synthesis of preparing alkylhalosilanes are used, like cesium, potassium, rubidium, a compound derived from said metals and the mixture thereof (see abstract). US`638 teaches the amounts of the additives in column 3 lines 20-41, where (calculated as weight of metal with respect to the weight of silicone), tin or tin-based compound is at 10-500 ppm, zinc is at 0.01 to 3%, while selected from cesium, potassium and rubidium additive is at 0.01 to 2% and optionally, additive selected from elemental phosphorus, phosphorus-based compound and a mixture of these entities is at 50-3000 ppm. US`638 teaches the use of bronze see col. 4, lines 22-25.

16. The difference between the instant claims and US`181 is not patentable because at the time of Applicant's invention, one of ordinary skill in the art looking to optimize the direct synthesis of preparing alkylhalosilanes would found it *prima facie* obvious to start with the teachings of US`181 and couple it with the teachings of US`638.

17. An artisan of ordinary skill would have been motivated to use the additives of US`638 in US`181 since it has been taught in US`343 (column 2 lines 28-44) that collectively the prior art teaches that combinations of silicon-copper alloys and *certain other materials* can be used to affect the reactivity or selectivity of the direct process of preparing alkylhalosilanes, where

additionally, levels of *certain phosphorus compounds*, as an additive, contribute to the enhanced reactivity and selectivity in the direct process of preparing alkylhalosilanes (column 2 lines 43-45); and the artisan would reach a reasonable expectation of preparing other alkylhalosilanes using said combinations.

18. The third difference, the recitation of alternative forms of acid phosphorus derivative and the state in which it naturally occurs is not patentable. The claim would have been obvious because the substitution of one known element for another, in this case, hypophosphites in lieu of phosphates, would have yielded predictable results to one of ordinary skill in the art at the time of the invention – since the use of hypophosphites is suggested by US'181, since US'181 generally teach the use of *any phosphorous compound* in column 3, lines 31 and 32.

The claim would have been obvious because “a person of ordinary skill has a good reason to pursue the known options within his or her technical grasp”. If this leads to the anticipated success, it is likely the product, not of innovation, but of ordinary skill and common sense.

The Supreme Court in *KSR* noted that if the actual application of the technique would have been beyond the skill of one of ordinary skill in the art, then the resulting invention would not have been obvious because one of ordinary skill could not have been expected to achieve it.

19. The combination of the teachings of the cited prior art references are fairly suggestive of the *prima facie* obviousness of the instant claims.

20. No claims are allowed.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MLouisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached on Mondays to Thursdays from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number:
10/578,439
Art Unit: 1621

Page 8

/ROSALYND KEYS/
PRIMARY EXAMINER
ART UNIT 1621

`mll12122007
MLouisa Lao
Examiner
Art Unit 1621

for YVONNE EYLER
SUPERVISORY PATENT EXAMINER
TC1600 GAU 1621